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## Breeding success of geese in west Spitsbergen, 1964

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### Summary

Details are given of the distribution of breeding Pink-footed, Barnacle and Brent Geese in Spitsbergen and of their past status. Counts were made in the south-west of Spitsbergen in the summer of 1964. Few young Barnacle Geese were reared but Pink-foot were more successful. Many nests were found and the factors affecting the choice of nest site are discussed: freedom from snow cover is the most important.

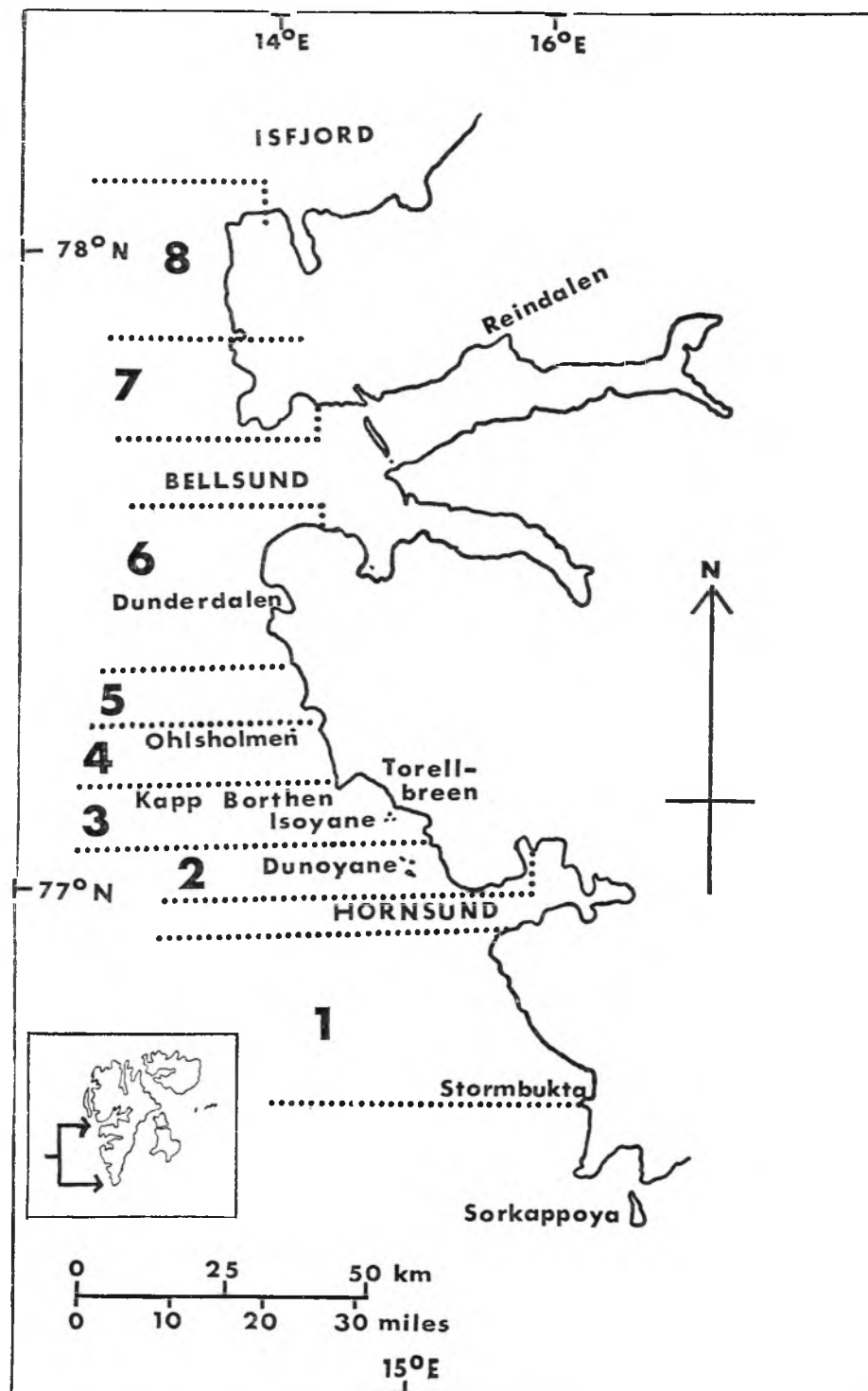
### Introduction

In the summer of 1964 two expeditions, one from Norway and one from Britain, visited adjacent parts of West-Spitsbergen with the object of investigating the status, distribution and breeding success of the Barnacle Goose *Branta leucopsis* Pink-footed Goose *Anser brachyrhynchus* and Brent Goose *Branta bernicla hrota*.

The Ornithological Group of the Norsk Polarinstitut, consisting of L. Ljøterud, B. Mathiasson (assistants) and M. Norderhaug worked from 7th July to 31st August in the coastal region from Stormbukta north to Ohlshomen/Kapp Berg (areas 1-4 on map). They also continued their Little Auk *Plautus alle* studies, begun in 1962. The Wildfowl Trust Expedition of R. J. F. Taylor and M. A. Ogilvie covered the coastal area between Isfjord and Bellsund (partially) and from Bellsund south to Kapp Borthen, from 18th June to 26th July. The two expeditions worked independently, but study methods had been co-ordinated beforehand.

### Topography

The topography of the south-west coast of West-Spitsbergen is characterised by a flat plain varying in width from one to six miles and never rising above 300 feet. Steeply sided mountains reaching 3,000 feet form a boundary on the eastern edge of the plain. Two wide and extensive fjords, Bellsund and Hornsund, and one large glacier, Torellbreen, break the area into three distinct parts, geographically but not ecologically. There are numerous off-shore islets and rocks, of which the largest such as the Dunöyane and Isöyane groups and Ohlsholmen are barely one square kilometre in area. They are low, grass-covered and with a few small, shallow ponds. Large parts of the coastal plain are nearly barren or with scant vegetation. It is only round ponds and streams and close to the foot of the mountain cliffs with their very large colonies of sea-birds, mostly Little Auks, that the richest vegetation is found. An association between these lush areas and the distribution of the geese is



apparent. The single large valley of Dunderdalen, over ten miles long, has considerable areas of poorly vegetated bog with small lush bits round the few ponds. The middle and upper parts of the valley are more barren still. The inner regions of the two fjords were not visited.

#### Weather conditions

The winter of 1963-64 was characterised by heavier than normal snowfall and an unusually cold spring resulted in a late thaw, with 100% snow cover still present at the Radio and Meteorological Station at the mouth of Isfjord until 5th June. The thaw was rapid when it came, with only 50% cover by 25th June, and the snow had gone completely from the coastal plain by 17th July. The end of June and the first half of July was generally fine with little snow or rain. Thereafter until the end of August the weather was predominantly wet with comparatively warm winds. Most of the drift-ice disappeared from the south-western coasts during the first week of July.

#### Barnacle Geese

Ringling of Barnacle Geese in the Hornsund area in the summer of 1962 (Larsen and Norderhaug, 1963) and on the Solway Firth, Scotland, in the following winter (Boyd, 1964) had confirmed an earlier inference that the flock of Barnacle Geese wintering on the Solway Firth, numbering 3,000 in 1962-63 and 4,300 in 1963-64, came from Spitsbergen and was a population entirely separate from the stock breeding in east Greenland and wintering in west Scotland and Ireland, and from that breeding in Arctic Russia and wintering in Holland and Germany.

Apart from the non-breeding flocks totalling 1,100 birds found in the Dunöyane Islands off Hornsund in 1962 (Larsen and Norderhaug, 1963) and the much smaller numbers found breeding there (at least 35 pairs) in 1963 (Norderhaug, 1964), records from Spitsbergen were scanty and gave little indication of where the birds might now breed in numbers. Løvenskiöld (1964) summarises the pre-war position and gives his own observations from many parts of the Svalbard archipelago which, however, were mostly made in the early 1950's when the Barnacle Goose population was much smaller than at present (Atkinson-Willes, 1963). He indicates two known breeding areas, both small. The colony in Longeyardalen was exterminated before 1931, probably by human activity from the nearby mine. The maximum size of this colony is unknown, but possibly not more than 50 pairs. 23 Barnacle Geese

were caught and ringed whilst moulting in Reindalen in 1954 and geese in small numbers have been recorded breeding in Sassendalen and adjacent valleys. Reindalen has been visited by oil prospectors in the past few years, but it is not known what effect this has had. Breeding was recorded from the Isöyane islands in 1924 (20 pairs) and from the nearby Dunöyane group in 1952 (12 broods). Another known breeding area is in the extreme north-west of the archipelago, where 20 pairs were found on a small islet off Dansköya visited by the Norsk Polarinstitut expedition ship in June 1964.

#### Breeding success of the Barnacle Goose

In area 1 of the map, no Barnacle Geese were found breeding or with young. In areas 2-4 all likely breeding localities were visited and searched during August and all used nests counted. It is unlikely that many sites or nests were not found. In area 5 no nests were located, but accurate counts were made of the number of broods of goslings. There were no records of Barnacle Geese in areas 6-8. Table I shows the numbers of geese and nests found. The total population counted was in excess of 1,511 with a gosling proportion of 10.0%.

**Table I. Numbers of Barnacle Geese and their nest-sites counted, West-Spitsbergen 1964**

	<i>Parents seen or estimated</i>	<i>Goslings</i>	<i>Nests and broods</i>	<i>Non- breeders</i>
Area 1	—	—	—	—
2	332	62	166	250+
3	180	—	90	?
4	40	71	20	220
5	50	18	25	289
total	602	151	301	759+

The main hatching period occurred before the breeding areas were visited, and only a handful of nests still in use were found. At Dunöyane on 14th July a few nests with eggs and one with hatching eggs were recorded. From observations of the age of goslings seen, the main peak of hatching was probably 4th to 11th July. There is excellent agreement between independent records made in areas 2, 4 and 5. Counts were made of the number of goslings in each brood seen, and the mean size of 59 broods was 2.6. It was not possible to estimate the proportion of goslings in the flocks in areas 2 and 3, but in areas 4 and 5 it was 13.4%.

Because of the incomplete counting in some areas and the unknown rate of failure of nests, it is not possible to use these figures to make a reliable estimate of the total population.

The great majority of the nests were on islets and skerries off-shore. Cliff-nesting, common in Greenland, has only been recorded in Spitsbergen from the Long-year-dalen colony. In areas 4 and 5 many of the family parties were on and around large lakes on the mainland. Although no geese were found in areas 6-8, there seems no major ecological difference between these areas and where the Barnacle Geese were found. There thus seems to be no barrier in this part of Spitsbergen to further increases in the Barnacle Goose population.

### Pink-footed Goose

Birds of this species were breeding in areas 1, 2 and 4 to 7. Nests were found in areas 6 and 7. The numbers of young and non-breeders were accurately counted in areas 4-7. The peak hatching period estimated from nests found and age of young seen was 1st-7th July, a few days earlier than for the Barnacle Goose. The choice of nest-site was very varied, including rock outcrops, the tops of low cliffs and 100 feet or more up steeply inclined grass-covered mountain slopes. Table II shows the numbers of adults and young counted. The proportion of young in areas 4-7 was 41.4% and the mean brood size in all areas was 2.7 (70 broods).

The Pink-footed Goose breeds almost throughout Svalbard wherever conditions are suitable (Løvenskiold, 1964). From ringing in West-Spitsbergen in 1953 and 1954 (Goodhart, Webbe and Wright, 1955, Holgersen, 1956) it is known that these birds winter in Germany and Holland. The size of this population is between 7,000 and 10,000 (Dr. M. F. Mörzer Bruijns and J. Phillipona, *in litt.*).

**Table II. Numbers of Pink-footed Geese counted, West-Spitsbergen 1964**

	Parents	Young	Non-breeders	Total
Area 1	8	10	270	288
2	30	38	116	184
3	—	—	—	0
4	16	21	3	40
5	0	0	25	25
6	106	146	170	422
7	8	11	60	79
total	168	226	644	1038

### Brent Goose

This species is scarce in the areas visited. Six used nests were found in area 2 and the probable number of birds in this area was under 70. A short visit was made on 31st August to Sorkappoya south of West-Spitsbergen where 120 geese were seen. Some of these had been there the whole summer but most had only arrived during the last week of August, probably gathering prior to migration (Dr. S. Siedlecki, pers. comm.).

### Choice of nest-site by Arctic-nesting geese

Selection of nest-site is probably governed by numerous factors. Freedom from snow-cover at the time of laying (calculated peaks in 1964 were 25th May to 2nd June for the Pink-footed Goose and 2nd to 9th June for the Barnacle Goose) is the most important. As mentioned above, the choice of site by the Pink-footed Goose is far more catholic than that of the Barnacle Goose and this is clearly an adaptation brought on by the longer incubation and, in particular, fledging periods of the former necessitating an earlier start to breeding. The interval from first laying to the final fledging of young is about 88 days for the Pink-footed Goose and 75 days for the Barnacle Goose. The Barnacle, with its preference for islands, can afford to wait. Islands, of course, are more likely to be free from Arctic Foxes, though there are records of these animals crossing to islands on sea-ice and causing great damage to nesting birds (Løvenskiold, 1964). The Pink-foot seems unworried by foxes; in one area six nest-sites were found within 400 yards of a fox earth containing a vixen and three two-months-old cubs. Eggshells in the nest and goslings in the neighbourhood suggested successful hatching of at least some of these nests. Thus the Pink-foot's varied choice of nest-site seems governed by the dominant factor of lack of snow cover, and the previously documented requirements for freedom from predators and also of a vantage point for the gander (Løvenskiold, 1964) seem to be consequences of this rather than criteria in their own right. Good feeding, both for the nesting birds and for their young within a reasonable distance is an obvious consideration; proximity to an expanse of water, fresh or salt, can be assumed to be secondary to this. 200 yards was the maximum recorded for the distance from nest-site to good vegetation. The immediate nest-site sometimes included a modicum of shelter for the sitting bird, a low rock for example, but the influence of this in the

selection of the site would only seem to be in terms of the final few inches.

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## The numbers of waterfowl in Estonia

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### Summary

About 27,000 pairs of ducks of 14 species, 500 pairs of Greylag Geese and 10 pairs of Mute Swans have bred annually in Estonia in recent years. Mallard (10,000 pairs) are most numerous, though they and Velvet Scoters (1,100) and Pochard (400) are decreasing. Eiders (3,500 pairs), Shoveler (2,500) and Scaup (90) are increasing. Much larger numbers occur on passage in spring and autumn, including over a million Long-tailed Ducks and Velvet and Common Scoters, over 100,000 Bean Geese and over 50,000 Whooper Swans. Few wildfowl winter, 3,000 Mallard being the most plentiful.

### Introduction

The intensive ornithological research of the last ten years may now be summed up to furnish provisional data on the numerical strength of the waterfowl in Estonia.

Counts of local breeders have been taken in a number of Estonian habitats. The most accurate returns we possess cover the bird population nesting in the archipelago. Estonia possesses nearly 800 small islands with a surface area not exceeding 100 hectares (250 acres), of which the majority are densely populated. Ornithological researches of a more detailed character have been carried out in the four areas where the population is densest. Together they contain some 180 islets, sandbanks, etc. (Figure 1). In each of these areas counts have been taken in from two to six years in the course of the past decade

(Table I), and the nests of most of the local breeding ducks have been traced.

The data for the littoral are less complete. At least two-thirds of the Estonian coast, that extends for about 3,400 kms (2,100 miles), are uncongenial as a breeding ground for the majority of the geese and ducks, which exhibit a marked preference for the deeply indented shores of the numerous coastal lakes and those sectors of the western seaboard and the south coast of Saaremaa Is., where coves, inlets and bays are thickest. Counts of the waterfowl in these regions were mainly taken along chosen routes during the nesting season. But more exact figures are available for the ducks in the Matsalu National Park, where most of the nests in a number of sample areas were traced and charted. The information obtained was sufficiently re-